The impact of contrasting alphabetic scripts on reading English

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Introduction

Current models of bilingual word recognition hold that all words that are similar to the input letter string are activated and considered for selection, irrespective of the language to which they belong (Dijkstra & Van Heuven, 2002). While these activation models are consistent with empirical data for bilinguals with completely different scripts (e.g. Japanese-English; Miwa et al., 2014), little is known about the bilingual processing in languages with two different but partially overlapping writing systems (cf. Jouravlev & Jared, 2014; Marian & Spivey, 2003; Kaushanskaya & Marian, 2007). The objective of this study was to examine the impact of convergence and divergence in script on English word processing of Russian-English bilinguals, for both cognates and non-cognates.
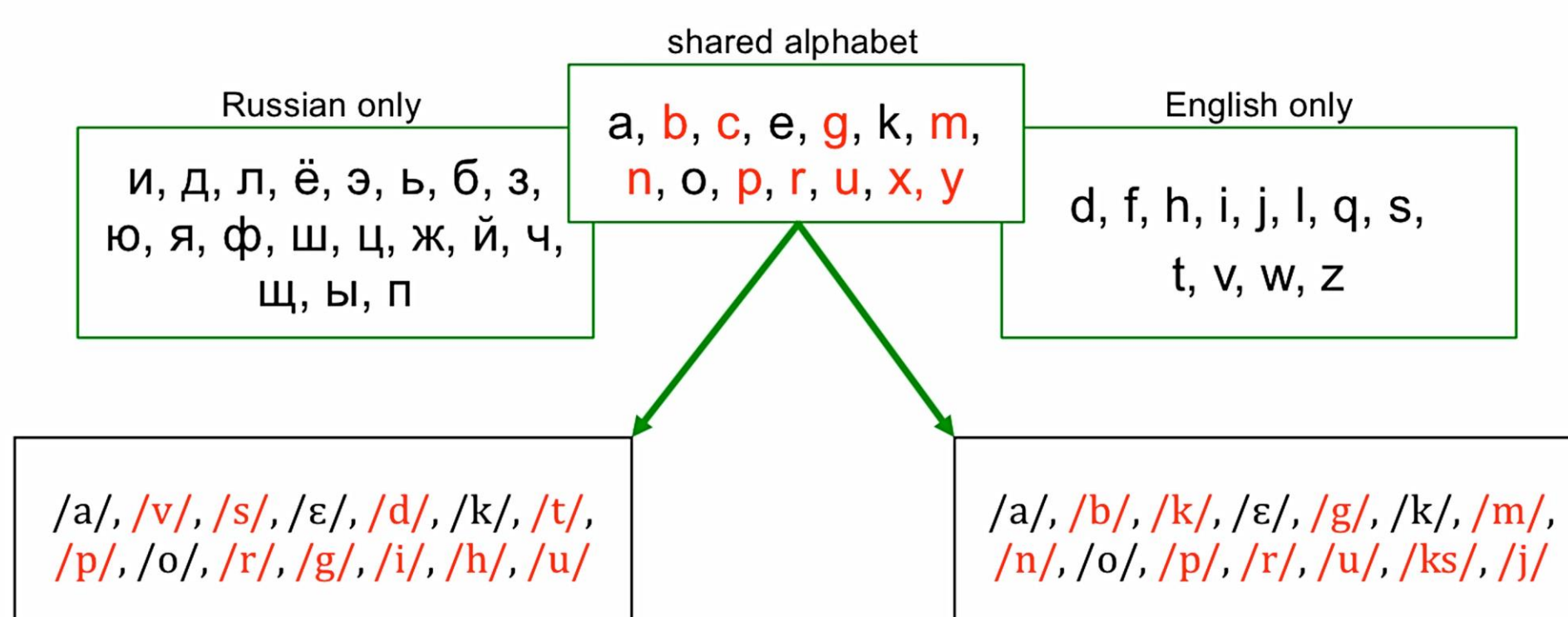
Alphabetic Contrasts R vs E

Figure 1: overlapping letters in lower case and cursive Russian and English, together with the associated phonemes in each language

Pilot: Orthographic Rating Study

- Subjects:
  - 20 Russian L1 – English L2 bilinguals
- Items: 3 cognate and matched non-cognate types/conditions
  - <u>mismatching</u> orthography (base) = mainly letters with no existing match in the Russian alphabet, e.g. vi<u>si</u>t
  - <u>shared-ambiguous</u> orthography (minus) = letters with different phonological mappings across R/E, e.g. rugby
  - <u>shared-transparent</u> orthography (plus) = letters with largely shared orthography-phonology mappings, e.g. koa<u>la</u>

Results & Discussion Pilot

condition type	cognate correlation values	
base (mismatching)	-0.34	negative
minus (ambiguous)	-0.06	none
plus (transparent)	0.43	positive

Table 1: correlation between the participants' ratings of orthographic similarity of English-Russian translation equivalents and the degree of orthographic overlap between the alphabets

- bilinguals consider orthographic congruence (as opposed to incongruence) between Russian and English translation equivalents
- higher ratings are given to words that have transparent (convergent) orthography

Main: L2 (English) LDT

- Subjects:
  - 37 Russian L1 – English L2 bilinguals (average AoA: 11.1)
  - average self-reported proficiency ratings (on scale 1-6) for reading and writing: 5.0 and 4.6, respectively
- Items: same as used in Pilot

Results & Discussion Main

condition type	cognates	non-cognates
base (mismatching)	661 (0.97)	727 (0.95)
minus (ambiguous)	711 *** (0.94)	734 (0.93)
plus (transparent)	656 (0.97)	730 (0.92)

Table 2: mean reaction times and accuracy (in brackets) for different stimulus types and conditions

- clear cognate facilitation effect
- cognate effect modulated by degree of cross-linguistic activation (1) and overlap (2)
  1. cross-linguistic competition in ambiguous vs. transparent cognates is detrimental to processing
  2. slight advantage for transparent vs. mismatching cognates due to phonological <u>and</u> semantic overlap

Conclusion

- further evidence for non-selective lexical access; from partially overlapping scripts
- observed effects are lexical in nature